

THE  
PSYCHOLOGICAL BULLETIN

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## THE LOGIC OF THE COLOR-ELEMENT THEORY.

In the following I wish to reopen a question long ago raised by Wundt, whether the conception of elements and compounds, or of primary and mixed colors, which underlies most of the prevailing color theories, is really appropriate to the subject-matter. Is this conception an essential factor in color-theory, or is it a foreign product which retains its place there merely through lack of criticism?

The conception is suggested, no doubt, by the phenomena of color-mixture. When we find that a combination of two disks of different hue gives a third hue it is natural to suppose that certain hues, or color-tones, may be found which, like the chemical elements, will form the components of all others and will themselves be not further decomposable. But nothing of the kind is discovered. The laws of color-mixture, as expressed in the color-triangle, show that all color-tones may be obtained from mixtures of three primaries, but, provided the three be chosen in proper relations, any color may be a primary. What kind of an element is that which may be indifferently an element or a compound? It seems to me that to drive the element-conception through the color-triangle is to accomplish its destruction. For the conception of elements and compounds calls for a one-sided relation, — the compounds must be derivable from the elements but the elements must be non-derivable; whereas the relation of the color-tones is circular, — that is to say, any color-tone chosen as primary may in turn be obtained from a mixture of others, one of which may be one of its compounds.<sup>1</sup> Clearly, then, on the basis of 'mixture' alone there

<sup>1</sup>From a strictly phenomenal standpoint we seem to find the same circular relation among the chemical elements, since in practice most of the chemical elements are derived and few are found free. It would be interesting to discover in what respect, if at all, the *phenomena* of composition in chemistry differ from those in color, but if the two sets of phenomena are throughout analogous, the question mainly suggested is, On what basis are the chemical

is no justification for the element-compound conception; the facts are not, in any real sense, facts of mixture until, from another source, you have distinguished certain color-tones as unalterably elementary.

Upon what grounds, then, are the elements distinguished? In this connection two forms of theory demand consideration, namely, the red-green-violet theory of Young and Helmholtz and the blue-yellow-green-red theory of Hering and others.

The motives underlying the Young-Helmholtz selection are somewhat difficult to determine. But among them I think we may discern the following: (1) All the mixtures may be obtained from three primaries; therefore there are only three primaries. (2) A combination of primaries (according to this theory) produces gray; therefore the primaries must be so related as to produce gray. (3) But the fundamental assumption appears to be this: all the 'real' colors are included within the spectrum (*i. e.*, purples are excluded) and, since saturation is not increased, but may be diminished, by mixture, they must be chosen from the most saturated of the spectral tones. These motives explain, though they do not fully account for the selection of red, green and violet: red and violet are the most saturated of the spectral tones, and if these constitute two of the primaries, the third, if gray is to be the result of combination, must be green.

It is easily seen, first that these motives are not conclusive; secondly that they are not consistently followed out. (1) The limitation of primaries to three rests exclusively, it would seem, upon the 'law of parsimony' — that is, upon the assumption that nature, being able to mix all color-tones out of three primaries, would not uselessly employ more. This may turn out to be ultimately a justifiable assumption, but in the present state of logic it is by no means a necessary one. And with only the color-triangle before us we have as good a right to choose four primaries, or a greater number, as three. (2) The requirement that the combination of primaries must give gray rests upon a feature of the Young-Helmholtz theory now generally discredited. (3) There is no necessity for placing the primaries upon the spectrum. The spectrum is purely a physical fact. Psychologically or physiologically purple may be as real and as elementary as any other color. And the psycho-physiological process is the whole matter in question and the whole matter contemplated in the color-element theory; for in the physical spectrum there are no primary colors, but only a *continuum* of varying wave-lengths.

elements distinguished and declared to be elementary? It is to be remembered, of course, that since Mendeleeff and Lothar Meyer they have not been strictly elementary.

And, as just observed, the requirements of the theory — the 'logic' of the theory, to use Mrs. Franklin's word — are not consistently maintained. Red and violet are chosen for their saturation; green, because a color in its neighborhood is needed to complete the series of mixtures and because green in particular is needed to complete gray; but the required green is of greater than spectral saturation and as such is hardly more a real color than purple. It should be noted, of course, that Helmholtz himself gives to all the primaries a greater than spectral saturation. But if we abandon the requirement of spectral saturation, why not abandon the spectral limitation altogether? Yet, if we do so, the Young-Helmholtz selection has lost its last argument; it has now no greater claims than any other set of three.

These considerations make it clear that, as Helmholtz candidly admits, the choice of primaries is largely arbitrary. And this arbitrariness, it seems to me, discredits the whole scheme of elementary and mixed colors. For how can you say that there *are* elementary colors when none of the colors will answer to this description? To construct a conjectural history of the Young-Helmholtz selection (on the basis, however, of a remark of Helmholtz), it would seem that Thomas Young, in looking for elementary colors, pitched first upon red and violet because, being the most saturated, they were the most striking, and then added green to complete the triad. But elementaries were sought for because, from the point of view of the time, no other form of explanation seemed intelligible. In a word, the element-compound conception was the only available 'form of thought.'

The grounds upon which the four-color theory rests at its present stage of development have been made relatively clear. The three-color theory was content to assume that, if we join the ends of the spectrum by the series of purples, we have a color-circle, *i. e.*, a series of changes which occur in only one order; the four-color theory claims, on the basis of introspection, that this circular arrangement is sharply broken at four turning points (corresponding to red, yellow, green and blue), each of which introduces a totally new order of variation, and all together mark off four distinct series and convert the color-circle into a color-square. The argument for this view, first advanced by G. E. Müller, is as follows: "It is evident that we are capable of distinguishing whether a sensation which goes through a series of changes before our eyes is changing *in a constant direction* or not. \* \* \* Now if we look through the whole circular gamut of color hues (the spectral hues completed by the lacking tones from red to blue) we find that it is not composed of a *single* series of this sort,

but of several interrupted by sharply-marked points of breaking. As we approach wave-length  $\lambda 505$  on one side, the sensation is getting less and less yellow in character and more and more green (this is a variation of a constant sort), but the moment we pass that point there is a distinct change in the character of the series—its successive elements get to look *less* and *less* like green and more and more like something quite new, namely, blue.<sup>1</sup>

I shall not attempt to deal with these observations directly. Direct denial, or qualification, is of course useless, since the denial has no greater authority than the affirmation. But there is a logical test of correctness, which may be applied even to introspection, namely, the test of consistency. The reporter of a fact has not only to stand by his observations, but to deny all that contradicts them. In the present case he has not only to affirm the existence of these turning-points, or breaking-points, on the color-circle, but he must deny that there are any relations of similarity and difference among the colors represented by them. Otherwise they would not be in the strict sense 'breaking points.'

Now it seems to me that *some* relations of similarity and difference among these so-called primaries cannot be denied, whatever they may turn out to be when studied in detail; nor can it be denied that these are similarities and differences of color-tone, or hue. To show how inevitable this feeling of relationship is I will quote a sentence from Miss Calkins' *Introduction to Psychology*. Miss Calkins, it is to be remembered, is a firm believer in the four-color theory and specially endorses the introspective argument of G. E. Müller.<sup>2</sup> This is the sentence: "The series<sup>3</sup> 'red, yellow, green, blue' cannot therefore be described as 'red, more red,'<sup>4</sup> still more red, but is rather to be described as

Red	
Yellow	different from red
Green	different from yellow
	more different from red

<sup>1</sup> Baldwin's *Dictionary of Philosophy and Psychology*, Vol. II., p. 785 (article on 'Vision').

<sup>2</sup> Page 465.

<sup>3</sup> Page 43.

<sup>4</sup> Of course no one would claim that yellow is redder than red and that green is still redder, but what of the opposite relation? If the series to be denied had been written 'red, *less* red, still *less* red,' or, from the other side, 'green, redder, still redder' I think the author must have hesitated and felt the necessity of something more than a flat denial.



Blue           different from green  
                  more different from yellow  
                  still more different from red."<sup>1</sup>

Miss Calkins is so certain of these relations that the table is repeated in a later chapter. But, we may ask, what is the meaning of 'different,' 'more different' and 'still more different'? Only one answer is possible: they mean nothing except as they refer to differences *of the same kind*. But of what kind? Saturation and intensity (brightness) have been expressly excluded. Evidently there is only one basis of comparison left, namely, that of color-tone, or hue; and the structure of the table makes it clear that this was the basis actually employed.<sup>2</sup>

This is mentioned merely to show how natural and inevitable is the feeling of a common color-tone quality, among even the so-called primary colors, of which the differences in hue are merely quantitative variations. Suppose you are called upon to solve the following problem: given the primaries, red, yellow, green, blue, to determine their relations of similarity and difference as regards color-tone. If they are strictly primary, or elemental, the problem is of course insoluble, — nay, it is absurd. Yet will any one declare that it is either absurd or altogether insoluble? No doubt the attempt at solution would reveal wide variations of opinion; these would be due partly to the fluidity of the popular conceptions of red, yellow, etc., partly to the difficulty of obtaining standard specimens of color, and partly also, I think, to the arbitrariness of any standards chosen; and, were all these difficulties surmounted, we should still face the difficulty of assembling the various relations of likeness under a simple and comprehensive formula. But there would be few persons without some opinion regarding the main points of resemblance. There would be few, perhaps, who

<sup>1</sup> How can it be said that blue differs more from red than from yellow? Blue and yellow, as contrast-colors, are commonly understood to mark extremes of difference. The last item of the table seems to indicate that it was made with the linear spectrum in mind and based upon the assumption that the greater interval upon the spectrum marks the greater difference. See note on p. 460.

<sup>2</sup> The author says (p. 43) that "the feeling of 'more' attaches itself directly to a feeling of difference, not directly to a sensational element of color." But what is a feeling of difference which is a feeling of difference of no kind whatever? Undoubtedly a feeling may be of a difference not clearly defined, but if the difference has no character whatever, the feeling, I should say, is nothing at all. As a matter of fact Miss Calkins has already to some extent defined the difference in question by making it a difference *not* of saturation and *not* of brightness. What other difference is possible except that of color-tone? And what other difference can be meant by the statement that (*e. g.*) green differs more from red than from yellow?

would not assent to the following: first, that blue and green resemble each other more closely than either resembles yellow or red; secondly, that yellow and red resemble each other more closely than either resembles blue or green. Some, indeed, might wish to qualify these statements by insisting upon a close resemblance between yellow and green, possibly even as close as that between green and blue (this may be only a matter of definition); but on the other hand, they would then admit that blue is less like yellow than green is. In any case it will be admitted that the supposed primaries stand in *some* relations of similarity and difference as regards their color-tone.

If these suggestions seem too fanciful consider the following: (1) Color-theorists as well as others distinguish blue and green as 'cold' colors from yellow and red as 'warm' colors and speak of the cold and warm ends of the spectrum. What can this mean except that each color resembles its class-mate more than it resembles those of the other class? (2) Many who have no other difficulty in distinguishing colors tend to confuse blue and green. And Grant Allen makes the ability to distinguish these colors an important point in his argument to prove that the color-sense of primitive men is equal to our own.<sup>1</sup> But does not the extra difficulty of making this distinction show clearly that blue and green are somewhat less different than other colors are? (3) Hering's classification of anabolic and katabolic processes corresponds to the classification into warm and cold colors.<sup>2</sup> Does not this testify to felt similarities and differences? (4) Finally, we may ask the advocates of the four-color theory, what will you do with the contrast-colors? It is commonly assumed that blue and yellow represent extremes of unlikeness. Can this description be repudiated? Would you say that the feeling of 'contrast' which every one has when these or other contrast-colors are brought together is simply an illusion? Yet, if you accept the description, does not the extreme grade of unlikeness imply intermediate grades, and in fact a complete scale of similarities and differences?<sup>3</sup>

It would seem, then, that introspection, which has been made the final court of appeal for the reality of the color-elements, clearly refuses

<sup>1</sup> *The Color-Sense*, Ch. XI.

<sup>2</sup> See Miss Calkins, p. 36.

<sup>3</sup> The contrast-relation seems to imply the following scheme: arrange the supposed primaries in their proper *order* upon the color-circle (or some other closed curve), leaving their exact position for the moment unconsidered; then each bears a certain resemblance to its two neighbors and is decidedly different from the remaining color (which is at or near the contrast-point). Those who accept the other resemblances involved in the scheme may halt at blue

to sanction their elementary pretensions. This does not necessarily destroy the four-series arrangement; for it may be four series in one. Nor does it deny a certain preëminence to the so-called primaries. It does, however, deny the appearance of any totally new sensation at the turning-points. In other words, these become, not breaking-points, but merely emphatic points. Their presence can perhaps be accounted for. All recent psychology goes to show that we cannot take in a mass of things or a row of things without cutting it up into conveniently perceptible parcels; and in the absence (sometimes, in the presence) of objective marks of division subjective marks are employed. Now, in observing a series of changes so numerous as that shown on the spectrum or the color-circle, such a subdivision would be clearly inevitable. For the points of division any of the color-tones might conceivably be used; it is in fact not difficult, by concentrating the attention upon hues commonly regarded as mixed, to regard these as primaries and the 'pure' colors as mixed. But in general the preference would probably be given to red, yellow, green and blue, since these colors, as their names seem to indicate, represent earlier and more established products of color-perception than orange and purple or 'peacock' and 'olive.' Consequently, it may be said that the Müller arrangement has a certain relatively objective significance. This, however, would not make red, yellow, green and blue the components of the other colors, nor would it deny to them relations of simiarity and difference among themselves. Altogether, it may be said here, as of the Young-Helmholtz theory, that the element-hypothesis is dictated, not by the nature of the subject-matter, but by the conceived necessities of scientific explanation.

Leaving the safer ground of negative criticism I venture to add something in the way of positive suggestion. At every period there are certain prevailing 'forms of thought' which furnish the criteria of scientific thinking. From, say, Newton to Darwin, these forms were exclusively mathematical; and during that period we had mind-stuff, mental atoms and compounds, psychical, social and economic 'forces.' During this period Thomas Young proposed the first really positive theory of color, and of course it was cast in the prevailing and red; for at first glance these colors seem to be almost without relation. But try the following experiment: compare a Milton Bradley orange-red with a Milton Bradley red; how will you express the difference? Is not the red *bluer*? If the 'purity' of the specimens be questioned, then we may make the question general: as you go red-wards from yellow is it not true, introspectively as well as schematically — though vaguely, that the color-tones in becoming redder become also bluer? In a word, is not red bluer than yellow?

scientific mould. Since Darwin and Spencer a new scientific form has presented itself in the conception of evolution. Through this conception we have been enabled to give to organic phenomena an order and coherence which, under the exclusive dominance of the mathematical conceptions, had been impossible; and through this conception the study of biology reached for the first time the rank of a science. Now color-theory deals with a distinctively organic process. We should thus expect it to be a distinctively evolutionary study. As a mathematical study it has been so far a failure; the elementary processes or substances are as hypothetical to-day as ever they were. Yet, in spite of certain innovations, color-theory still retains as its most important feature its primitive mathematical hypothesis.

Mathematical statement presupposes definite constants. If the color-elements are to play their part as elements and are to serve as a basis of calculation they must be fixed and invariable. Consequently, the color-element theory presupposes a fixed and normal eye; according to Helmholtz it contains three photo-chemical substances of definite and invariable composition; according to Hering it contains three invariable processes of decomposition and recombination. And when eyes are found which plainly refuse to answer to this description the abnormalities are assumed to be also definite and invariable, — that is to say, one or more of the substances or processes is absolutely lacking. But the conception of definite normal and abnormal conditions is opposed to all biological analogies. From abnormal to normal, nature, it is clear, makes no leaps. In the organic world everything is always in a condition of evolution, and in the course of evolution there are no such catastrophic changes as the sudden appearance in the retina of a new substance or a new process. We speak of 'stages,' to be sure, but this is merely a matter of convenience. In reality the process goes continuously on; there are no stations on the road and the journey is never at an end. The normal is merely a convenient average, and the individuals to be described by it are to be found, not all abreast of the normal point, but in a considerable line both before and behind it; nor is there any absolute gap between them and the abnormal.

This, it seems to me, is what we should expect to find if color-perception were treated as an organic process. In an organic process there are no fixed conditions upon which the conception of elements can rest; and what we have to do is not to analyze colors into their elements but to trace the order followed in the development of the *process* of color-perception. In this process we should expect to find

many stages; each stage would have its own spectrum or color-circle showing the degree of differentiation and identification of color-tones so far reached; and the only constant relation would be that involved in the identification of the several stages as features of a continuous, individual process.

Recent developments in color-theory have been in the direction of the evolutionary hypothesis. The theory of Mrs. C. L. Franklin is suggested primarily by the facts of peripheral color-blindness and assumes that present peripheral conditions represent universal conditions at earlier stages of color-perception. But the theory retains the four-element feature of the Hering theory; and this, it seems to me, stands in the way of a truly evolutionary interpretation. For it leads to the assumption that the successive stages of color-perception are widely separated and sharply marked. And not only is this opposed to biological analogies but, it would seem, the order proposed in these several stages is equally opposed to psychological analogies. In Mrs. Franklin's theory color-perception develops through the addition of wholly new elements; first we have black, gray, white, then these *plus* blue and yellow, then these *plus* green and red. But psychologically it seems that development takes place through the gradual and constant differentiation and reconstruction of an earlier content. My conception of a typewriter is to-day much more definite and coherent than upon the day I first saw one, yet I cannot say that any part of the typewriter was wholly absent from my first visual picture of it. We should expect to find, therefore, not blue-yellow followed by blue-yellow *plus* green-red, but a grosser distinction, embracing possibly the whole spectrum, followed by gradually finer distinctions within the same content. It is possible, for example, that the distinction of warm and cold represents the earlier stage more truly than that of yellow and blue.<sup>1</sup>

Whether such an order of development really exists is of course a matter for investigation — more particularly, perhaps, for investigation in the field of color-blindness both peripheral and general. The facts of color-blindness have been studied but not, I think, with a really

<sup>1</sup>In calling the earlier distinction 'blue-yellow' we seem to commit the 'psychological fallacy' of reading into one set of conditions a distinction found only in another. It must be remembered that every experience is what it is only in distinction from others, and that the character of the experience must thus depend upon the character of those from which it is distinguished. The blue of the 'normal' person is distinguished as such not only from yellow but from green and red; the blue of the 'partially color-blind' person is distinguished as such only from yellow. Surely it cannot be in both cases the same blue.



evolutionary hypothesis in view — that is to say, not with a view to discovering a lengthened and unbroken developmental process. Until this has been done it cannot be declared that this hypothesis is conclusively false.<sup>1</sup>

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<sup>1</sup>The MS. of this article was received Sept. 16, 1904.—ED.

## PSYCHOLOGICAL LITERATURE.

### ÆSTHETICS.

*Grundzüge der Allgemeinen Aesthetik.* DR. STEPHAN WITASEK.  
Leipzig, 1904.

In much of its detail the book before us is the ripe fruit of the various psychological studies of feeling and *Einfühlung* which Witasek has published from time to time. In its totality it is a thoroughly logical and consistent development of a standpoint in æsthetics which it is important and desirable to test to the utmost. For this reason the effort is to be heartily welcomed and its very consistency forbids any criticism except that which includes the raising of the fundamental problem involved.

The problem may be stated thus. It has been customary to speak of an æsthetics *and* of a psychology of the æsthetic consciousness. The former was conceived to deal with the meaning or implications of certain attitudes and was, therefore, a worth science; the latter, having, by a process of abstraction, turned the attitudes into states, was thought to be concerned only with the analysis of the conditions of these states. Wherefore, a difference in method was recognized which may be stated tentatively, although unsatisfactorily, in the terms of the older distinction between the teleological and causal methods. Witasek's thesis, on the other hand, is that æsthetics in general (see the title of the book) is identical with the psychology of the æsthetic states, a position by no means new of course, but one which has scarcely been so rigidly followed out before. The way of explanation in æsthetics is, therefore, strictly causal. Any given concrete modification of æsthetic experience is susceptible of explanation only as the product of the working together of certain factors isolated by psychological analysis. As a consequence all the attempts to view the æsthetic experience under unitary 'enlightening' categories, such as play, self-conscious illusion, etc., what may be called appreciative descriptions, are at best pre-scientific and have explanatory value only in so far as they can be reduced to more elementary psychological terms, a task which he attempts and which affords an interesting test of his method. These other methods suffer, he insists, from the smuggling of the worth moment into the æsthetic psychosis itself when as a

matter of fact the elementary æsthetic feeling state is not a worth feeling, worth feelings entering in to modify it only as secondary moments.

Briefly stated his argument runs as follows: In Chapter I., which is concerned with the definition of the fundamental æsthetic fact, it is pointed out that the æsthetic attribute (for instance the typical attribute, beauty) is not an attribute of objects as such, apart from the subject, but rather an attribute which arises out of certain relations of the objects to the subject's feeling attitude. These relations may be of two kinds. The object may be in causal relation to the feeling, or it may be in what he calls Ziel-relation, that is, the object *toward which the feeling is directed*. "The æsthetic attribute of an object is then the fact that it stands in causal or Ziel-relation to the æsthetic attitude of a subject." The two types of relation which condition the æsthetic feeling should be carefully noted, for we shall return to the distinction in our later criticism. Chapter II., on 'The Æsthetic State of the Subject,' seeks to differentiate the æsthetic state from other states. The important thesis here is that the æsthetic experience is feeling but not worth feeling. The fundamental æsthetic state is not a worth feeling although many modifications of the æsthetic are brought about by the inclusion of secondary worth feelings. This exclusion of æsthetic feelings from the class worth feelings rests upon the view, which he shares with Meinong, that only such feelings as have judgments or assumptions as their presuppositions are worth feelings, a view which I think cannot be maintained but which we cannot stop to criticize at this point. Æsthetic feelings are then presentation feelings. Of the æsthetic attitude, he says, to quote his own words (p. 221), 'Es steht jenseits alles Werthen wenn nicht jenseits aller Werthe.' A second differentia of æsthetic feeling completes the definition. Not all presentation feelings are æsthetic; various sensations, perception and conceptual feelings are not æsthetic. Only intuitive (anschauliche) presentation is æsthetic. Those feelings, then, which arise upon intuitive presentation alone are æsthetic — and, since the two dimensional theory of feelings is upheld, there are, strictly speaking, only two fundamental modifications of the æsthetic (beauty and ugliness); all other feelings are pseudo-æsthetic. Two problems thus naturally arise. What are the possible intuitive presentations which may give rise to the fundamental æsthetic reactions, beauty (pleasure) ugliness (unpleasantness), and what are the pseudo-æsthetic factors, judgment (or Annahme) feelings, which may enter to produce the other modifications, the tragic, sublime, etc.?

The elementary æsthetic objects are therefore intuitively presented. How shall this characteristic, intuitive, be defined, and what objects fulfill the criterion? The criterion itself is somewhat difficult to define and the writer trusts rather to illustration and his analysis of the groups of objects which fall within the intuitive to make his distinction clear. These are (*a*) simple forms, objects of perception, (*b*) form qualities (*Gestalten*) such as melody, rhythm, spatial symmetry, etc., (*c*) objects with norm suggestion or objects of worth beauty and (*d*) expression (*Stimmung*) or objects of inner beauty (cf. pages 27 and 180). The purely formal character of the first two classes of elementary æsthetic objects is obvious. It is in the last two classes that we find the possibility of the entrance of content factors, in the form of feelings with other presuppositions than presentation, worth feelings. In the former of these, for instance, the object which represents the norm may have beauty merely as intuited object; but in addition to this a 'worth beauty' may enter through the inclusion among the presuppositions of a judgment as to its normal character, a judgment which may be either explicit or merely dispositional (p. 83). In the last class, which includes expression, *Stimmung*, a pleasure, beauty, may arise from the mere intuitive presentation, *Einfühlung* into an object or person of psychical states, but an additional feeling may arise from sympathy, in the form of participation feelings (*Antheilsgefühle*) which arise upon the assumption of, or judgment as to, the existence or non-existence of the psychical states in question and which are, therefore, worth feelings. An original, distinctively æsthetic state may therefore be increased in feeling intensity, through the enlargement of its presuppositions, through the inclusion of pseudo-æsthetic feelings.

It remains now to gather together and classify the different extra-æsthetic moments, judgment and assumption feelings which may enter in to modify the original æsthetic feeling. These are, briefly summarized, (*a*) knowledge worth feelings, such as arise, for instance, in the imitative and the characteristic, both of which involve judgments and neither of which is really an æsthetic moment; (*b*) ethical worth feelings, more particularly the sympathetic participation feelings following upon the judgment of the existence or non-existence of subjective states, pleasure, pain, etc., in others; (*c*) finally a group of feelings to which no distinctive class name is given, following upon the realization of the success or failure in the processes which condition æsthetic experience, for instance, æsthetic *Einfühlung*. This classification by no means does justice to the rather wearisome detail

of the writer's analysis, but it is at least sufficient for the purpose for which it is here adduced, namely, to show the general method of the reconstruction of the concrete modifications of the æsthetic out of these abstract elements.

A few typical illustrations will make this method clear. Beauty, which can be brought under no general formula (although harmony, absence of conflict of the feeling elements which go to make up the concrete, complex æsthetic attitude, is applicable to a wide range of phenomena), is best represented by the second group of æsthetic objects, the *Gestalten*, rhythms, melodies, etc., where the pure intuitive representation is most clearly marked. As soon as the worth feelings, the pseudo-æsthetic worth factors are introduced, the total experience, although it may still be called one of beauty, begins to lean toward other modifications of the æsthetic. Thus 'the tragic,' to treat his definitions most summarily, 'is fundamentally characterized by unpleasant participation-feelings.' "The object which arouses the feeling of sublimity is as such the object of *Einfühlung* on the part of the subject." The content of this projection, he goes on to further specify, is spiritual worths of extraordinary greatness (p. 322). The comic is throughout unæsthetic, although it may enter into an otherwise æsthetic whole. It is made up entirely of worth feelings, sympathetic ethical, and knowledge worth feelings as the result of successful characteristic.

This, in the main, is the synthetic side of Witasek's method. It would not be difficult to find points of criticism in this reconstruction of the concrete modifications of the æsthetic. In particular, one is led to doubt a definition of the fundamental æsthetic which excludes the comic and humorous. But any attempt to criticize these reconstructions in detail, to be of any value, would inevitably involve a minute discussion which the occasion will not permit. Rather let us return to the fundamental question of method. Here we shall find it necessary to take issue on three points: (1) The contention that the æsthetic experience itself is not a worth experience; (2) the consequent exclusion of all appreciative or worth descriptions from the science; (3) the view which underlies the entire procedure, that æsthetics as a science is identical with the psychology of the æsthetic consciousness and therefore includes no type of explanation except the causal.

The fundamental conception that the æsthetic attitude is beyond all valuation if not beyond all values, rests upon the assumption that the necessary presupposition of worth feeling is judgment. Whether this is true or not, is, of course, at bottom a matter of introspection;



but the reviewer, at least, is sure that there exist states of feeling (certain mystical states in religious experience, if no others) where the worth moment is present without any intellectual judgment presupposition being explicitly present, although conative tendencies or dispositions are. The æsthetic state is an attitude, and attitude always involves valuation. Mere intuition, presentation without worth attitude, is an abstraction which may be useful as a relative distinction in analysis but which never appears in reality. Genetically, it is a secondary product of the exclusion of certain conative tendencies which, however, remain latent and constitute the dispositional presuppositions of the æsthetic feeling.

As a worth attitude, therefore, the æsthetic has the right to interpretation as well as causal explanation, *i. e.*, in the very idea of an æsthetic science interpretation is included. The appreciative, functional descriptions, therefore, which were called pre-scientific and reduced to their analytical elements, have as such a place in such a science. Without raising the question of the validity of any of these particular descriptions (such as those which characterize the attitude in terms of freedom, or self-conscious illusion, of play, as dealing with appearance and not reality, etc.) in principle, it is precisely these appreciative descriptions which are the first stages of interpretation. It may be true, from the standpoint of psychological analysis, that we may, as does Witasek, reduce in a negative manner these appreciative descriptions to their psychological elements. We may say that what is meant by freedom and desireless intuition is the absence of judgment presuppositions in our feelings, that the description of the attitude in terms of play, self-conscious illusion and appearance points to the fact that the feelings involved are *Annahmegefühle*, follow upon assumptions and not judgments — all this may be true, but there is still a positive side to the description which affords the starting point for the interpretation of the functional significance of the æsthetic attitude in the total mental life. It is quite logical, therefore, that Witasek, in denying the worth character of the æsthetic attitude, should see no functional significance in it except through the inclusion of pseudo-æsthetic factors.

Finally, then, our criticism of Witasek is not so much on the ground of his psychological analysis as because of his conception of æsthetic method which follows upon the exclusion of the æsthetic attitude from the sphere of worths. His recognition, in the introductory chapter, of the fact that the æsthetic attitude rises upon Ziel-relation of feeling to object as well as causal, should, it would seem, have led to an en-

largement of method in the direction indicated. Attitude is direction of feeling upon an object, but it is hard to see how there can be this direction of feeling without valuation, either explicit or implicit, being involved. Valuable as the purely analytical method of psychology is, no satisfactory description of the concrete modifications of consciousness is possible without recourse to a method which is functional and, in the larger sense, genetic. Such a method would be part of an 'allgemeine Aesthetik.'

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#### MUSIC.

*Essai sur l'esprit musical.* LIONEL DAURIAC. Paris, 1904. Pp. v + 304.

It is a fluently written, easily readable book which Dauriac presents to the public, the result of the observations of a life time. It is written in the manner of Gurney's well known book on the same subject, addressed to the general reader rather than to the professional psychologist. It does not, therefore, attempt to solve any special psychological problems concerning the æsthetics of music, but limits itself to a discussion of the musical abilities of the average hearer who is no professional musician. The author's method consists in gathering the terms in which these abilities are usually described in the language of daily life as well as in modern treatises of musical and philosophical writers and in carefully analyzing their different meanings and adopting the one which seems to be best suited for a clear exposition of the abilities in question. He distinguishes between musical sensation and musical intelligence, meaning by the former the ability to be variously affected by the musical elements as such, by the latter the capacity of comprehending and enjoying the combinations of such elements into 'phrases' or whatever name one might give to such combinations. The book will doubtless be welcomed by those who desire an introduction into the psychology of music in general without being interested in special problems of the science.

*Zur Struktur der Melodie.* FRITZ WEINMANN. Zeitschrift f. Psychol., 1904, XXXV., 340-379, 401-453.

The article does not contain any *observations* to speak of. The author merely attempts to apply the theory of melody of Lipps to the most common musical phrases and to the major and minor scale. So far as the application of any theory to a mass of more or less disconnected facts must be helpful to the scientist, psychologists will be

thankful for what the author has accomplished. Those, indeed, who regard the Lippsian theory as the final truth, will derive much satisfaction from this expansion of the theory. Those, however, who prefer science to speculative thought, will be rather disappointed in reading this article. The Lippsian theory that musical tones are rhythms, *i. e.*, micro-rhythms, that melody is a system of such rhythms, and that the laws of tone relationship need *not* be investigated by independent *experiments* but are to be logically derived from the laws of rhythm which we know—this theory is accepted by the author as a dogma the truth of which must not be questioned. Since he is convinced that the laws of tone relationship can be derived from the laws of rhythm, pushing aside, indeed not even mentioning, the particular observations published which squarely contradict the results of this speculation, one should at least expect that he has carefully made use of the recent literature on rhythm, as the laws of rhythm are declared to be the basis of the whole system. But the only monograph on rhythm known to the author is Meumann's paper published ten years ago. Of the recent work on rhythm found chiefly in this REVIEW and other American periodicals he is entirely ignorant. Lippsian doctrine is throughout the paper substituted for experimental inquiry. Not results of experimental investigation and careful introspection, but exclusively quotations from the publications of Lipps are made the premises from which he draws his conclusions. That the method of scientific research just depicted is still to be found in the beginning of the twentieth century, seems to the reviewer to be a matter of regret.

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#### MEMORY.

*La fonction de la mémoire et le souvenir affectif.* FR. PAULHAN.  
Paris, Félix Alcan. 1904.

It will be of interest to those who have followed the question to learn that the specific problem of affective memory has attained to the dignity of monographic treatment. Paulhan, who had already contributed to the subject in two articles in the *Revue Philosophique*, has now treated the question more at length, and in his hands, it is scarcely necessary to say, the method is largely functional and, in the larger sense of the word, genetic.

Hitherto the problem has been chiefly one of analysis. The problem of the very existence of affective memory, its differentiation

from the memory of ideas, the determination of the conditions of its appearance, all this has been sufficient to occupy the attention of the psychologist. But Paulhan, taking the positive results of this analytical labor largely for granted, passes on to the study of the functional significance of the phenomenon for the mental life as a whole. The special aspects of the phenomenon which interest him most are the functional interrelations of affective and intellectual memory; the transformations which an effective state undergoes in memory as contrasted with the effect of the lapse of time on perceptual and ideal memory images; and finally what he calls the utilization of affective memory, individual and social.

The existence of affective memory is, we have said, assumed. At least, the first two chapters, which are concerned with a rehearsal of the facts upon which the theory is based and a differentiation of these facts from those of ideal memory, disclose nothing new, and, if the matter be viewed critically, rather display a lack of first hand knowledge of all the literature on the subject. The contribution of the author to the subject is to be found rather in the light he is enabled to throw upon the phenomenon from his study of the functional significance of memory as a whole. Memory (retention), in the larger use of the word, includes two very different phenomena; first the case where an element is retained as part of the mental life through the sacrifice of its position as an independent element — is retained merely through the dispositional traces which it leaves upon the habit or functional side of consciousness; secondly the case where, on the other hand, it is retained as an independent element through its refusal to be lost in the processes of systematization and organization. To the latter, narrower form of memory we give the name *Souvenir*, revival, recall. With this preliminary distinction within the general field of memory the writer enters upon the study of affective memory. The distinction made by Mauxion between 'true' and 'false' affective memory corresponds to a real difference. The 'true' memory, in this sense, is the revival of a past emotion independently of its part in a systematized whole, or apart from habit. The question for analysis is then, not whether the affective state is a revived state or a new state, but whether it is a state revived independently or one modified by processes of assimilation and systematization. The opposition is not between memory and invention but between memory and organization. *Souvenir*, in the strict sense, terminates with organization (p. 52).

What is the relative functional significance of these two types of

retention in the mental life, more especially as applied to the affective side of consciousness? This, the problem of the 'utilization' of affective memory, is the central theme of his study. Of that form of memory which is involved in organization, in the retention of dispositional traces of feeling through systematic association, the same may *mutatis mutandis* be said as of organization in general. It is the basis of affective or worth continuity. It is everywhere in evidence and is the goal of progressive adaptation. What then is the rôle of this *souvenir* or revival of affective states as independent elements? Its rôle is analogous to the revival of perceptions as independent elements and the means of revival are similar, namely, association by contiguity rather than systematic association. To state briefly what the writer has developed with a wealth of illustration from the individual and social life, this affective revival is the conservative function in the mental life. The equilibrium of mental activity is the resultant of a struggle of the elements. Systematization is possible only through loss, sacrifice of the independence of the elements. Just as the revival of perceptions as independent elements is necessary to correct the vices of too great fluidity of thought, so the fixation of concrete affective states through arbitrary associations of contiguity serves as a balance wheel in the instinctive life of feeling and will. How the writer applies this, how he works out the technique of this *souvenir* in the moral and religious life of the individual, in the ceremonial and conventional mnemonics of race organization, must be left to the reader to discover.

Two additional points are brought out with interesting detail, the interrelations of intellectual and affective memory and the transformations that an effective state undergoes with lapse of time as compared with the transformations in idea. In the first case he shows how the purely intellectual memory tends to pass into affective if the conative tendency to which it corresponds is fortified or especially excited by attending circumstances or by arrest; how, reciprocally, the affective passes into intellectual memory if the conative tendency is able to satisfy itself more easily and regularly. His comparison of the transformations of affective memory with those of the intellectual results in the following conclusions. The well known fact of ideal memory, that enfeeblement, loss of intensity accompanies the lapse of time, is the opposite of the law of affective memory. Here with the tendency to generalization of affective attitude with the lapse of time he finds an actual increase of intensity and purity of the affective state and a consequent tendency to fixation. At bottom these opposite ten-



dencies may be reduced to the same functional causes working in different ways. The memory image tends towards hallucination, the remembered sentiment tends toward intensification and expansion in consciousness. Both are, however, affected by certain *réducteurs*, by the struggle with other elements. But while the memory image, the intensity and permanence of which are dependent upon the perception which gave it birth, is constantly being reduced by new impressions, the intensity and expansion of the sentiment, being dependent upon the degree of organization of the conative tendencies which it presupposes, and not upon the intensity of the perception which occasioned its appearance, are, within certain limits, increased rather than diminished by the arrest exercised by new elements (pp. 82, 83).

In conclusion, it may be said that this essay of Paulhan's reveals at the same time both the excellencies and the faults inherent in his general method. While some of his particular conclusions show, perhaps, a tendency to undue generalization and a certain lack of perception of some of the more difficult problems of analysis involved, the general tendency of his work is one in which the psychologist can take satisfaction. It contributes to our insight into the functionally important rôle which affective memory plays in the continuity of consciousness. And, while showing this, it incidentally fills up a gap in his own systematic portrayal of the mental life, a portrayal which, though written perhaps in a somewhat large and schematic way, has in its successive stages, without doubt, contributed not a little to that systematic view of the mental life without which our particular studies threaten to become 'useless knowledge.'

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#### SOCIAL AND GENETIC PSYCHOLOGY.

*Indian Boyhood.* CHARLES A. EASTMAN. New York, McClure, Phillips & Co. 1902.

Social psychology is not confined to works written with purely scientific purpose. In the book called *Indian Boyhood*, Dr. Eastman has given much valuable material for the psychologist, although designed primarily for his young son, as a record of his father's boyhood. Dr. Eastman has the double advantage of both an Indian's and a white man's education, and so is able to tell of Indian life not only from the inside but from the outside.

Many illustrations are given of the strong control of the group over the individual. In hunting, the Indian police "oversee the hunt,

lest some individuals should be well provided with food while others were in want. No man might hunt independently. The game must be carefully watched by the game scouts, and the discovery of a herd reported at once to the council, after which the time and manner of the hunt were publicly announced. \* \* \* An Indian might hunt every day besides the regularly organized hunt; but he was liable to punishment at any time. If he could kill a solitary buffalo or deer without disturbing the herd it was allowed. He might also hunt small game."

The influence of group institutions is also illustrated by the Maidens' Feast (pp. 181 f.) which was jealously guarded against any unworthy participants, and by the similar feast of young men "in which the eligibles were those who had never spoken to a girl in the way of courtship. It was considered ridiculous so to do before attaining some honor as a warrior, and the novices prided themselves greatly upon their self control."

The forces which make toward collective and toward family or individual life are well shown also. Military necessities favored the large company, economic advantage the small group:

"There was a constant disposition to break up into smaller parties, in order to obtain food more easily and freely. So large a body [from two to five thousand] could not be easily supplied with the necessities of life; but on the other hand our enemies respected such a gathering! Of course the nomadic government would do its utmost to hold together as long as possible. The police did all they could to keep in check those parties who were intent upon stealing away. \* \* \* It was chiefly by reason of this food question that the Indians never established permanent towns or organized themselves into a more formidable nation" (p. 261).

If Dr. Eastman's own boyhood was a typical one the consciously directed educational forces were very great among the Indians. They gave to the boy's mental and moral equipment for his life as hunter and warrior an unremitting and extraordinarily well directed course of instruction. In fact the customs in connection with the training of children were, like other customs, held to be divinely instituted, and hence were scrupulously adhered to. The pregnant Indian woman would frequently choose some character as a model for her expected child, learn all his exploits and dwell upon them in solitude. The infant warrior hears lullabies rehearsing exploits in hunting and war. The girl is at once addressed as the future mother of a noble race. The boy hears almost every evening a myth or a true story of some

deed which he must himself repeat the following evening, for the criticism or applause of the household. "His conception of his own future career becomes a vivid and irresistible force." "It seems to be a popular idea that all the characteristic skill of the Indian is instinctive and hereditary. This is a mistake. All the stoicism and patience of the Indian are acquired traits, and continual practice alone makes him master of the art of wood craft." In the case of Dr. Eastman his chief teachers were his uncle and grandmother, as his mother was dead and his father a prisoner among the whites. The uncle catechized him at night on what he had seen during the day, taught him the habits of animals, challenged him to fast with him all day, waked him with war-whoops and ridiculed him if he did not instantly grasp a weapon and whoop in reply, and sent him for water after dark when camping in a strange place. The grandmother gave special attention to the moral and religious training. "Religion was the basis of all Indian training" (pp. 49-60).

The games of the Indian boy are more directly related to the occupations of adult life than can be the case with those peoples which have exchanged the thrilling life of the hunter for prosaic farming and trade — except, perhaps, as the white boy plays marbles 'for keeps' or pitches pennies. "We practiced only what we expected to do when grown. Our games were feats with the bow and arrow, foot and pony races, wrestling, swimming and imitation of the customs and habits of our fathers." The boys even played 'medicine dance' in secret, for to imitate these dances was regarded by the elders as irreverent.

The most striking and impressive incident in the boy's education was his first offering to the 'great mystery,' made when he was eight years old. The story of the process by which his grandmother worked him up to the point where he was willing to sacrifice his inseparable companion, a dog, is most instructive. The complex emotions — desire for future success, pride in rising to the height of a brave deed, awe in the presence of natural forces, actual and suggested, social sympathy — exhibit the chief roots of the religious sentiment. Modern methods of 'painless education' certainly make a less forcible appeal to some of the deeper elements of character.

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*The Genetic Function of Movement and Organic Sensations for Social Consciousness.* MARGARET FLOY WASHBURN. American Journal of Psychology, 1903, XIV., 73-78.

In the first paragraphs, the author draws the distinction between a concrete element and a genetic element of mental life. The former may be in its nature complex, but by introspection it cannot be reduced to simpler forms. An example is the sensation red. Such a concrete element may be the result of a long process of combination of primitive ingredients. These primitive ingredients probably were unlike anything now experienced as a concrete element; they were the psychic aspects of *nervous shocks*; the author would differentiate these primitive ingredients by using the term *genetic elements* for them.

The remainder of the article is a discussion of the origin of social consciousness. Attention is drawn to the fact that the rise of social consciousness cannot be explained by the data furnished by introspection. The explanation by imitation, given by Prof. Baldwin, accounts for the awakening, not for the construction of social consciousness.

We find the child has such a mental constitution that he gives a social interpretation to certain experiences, but how it comes about that he does so, we are unable to explain in terms of introspection. Observation of animal life furnishes evidence that certain motor reactions of coming to the rescue, joining in defense, and so forth, were developed before it is possible to assume the presence of any social consciousness of a fellow creature's suffering.

We cannot be sure that the animals below man can have a representation of their own past experiences; much less probable is it that they can have an idea of the experiences of others.

The social motor reactions are found in animals very low in the scale, while the power to represent, the power to form free ideas, is a much later development.

The life of the species may depend to a considerable degree upon the helping activity of the members of a group; that there should be aroused a representation of the suffering of the animal is not so necessary; these representations are by-products in the growth of the representative power in general. As this power develops the conscious state produced in the mind of one animal by manifestations of mental processes in another would be determined by the elements entering into it; these elements are the genetic elements, that is, the movement and organic sensations produced by reactions, and 'already on the field before social consciousness develops.'

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*Enquête sur le sentiment de la colère chez les enfants.* P. MALAPERT. Année Psychologique, Vol. IX., pp. 1-40.

In this article M. Malapert states the results obtained from a questionnaire sent out by the 'Société libre pour l'étude psychologique de l'enfant.' This questionnaire is one of three sent to members of the Society, to primary inspectors, and to instructors. It consists of nineteen questions covering the following points: The general characteristics of the subject, physical signs of anger, acts during anger, self-control, provocative causes of anger, premeditated anger, phenomena consequent upon fits of anger, effect of heredity, and influence of climatic and physiological conditions. The conclusions are based upon observations on 183 children of whom only fourteen were under six years of age.

The writer proceeds first to a statistical summary of the replies to the questionnaire. Among his conclusions are the following: The majority of children observed are normal in their intellectual development; anger is not particularly characteristic of feebleness of mind. Contrary to Lange and Ribot, M. Malapert finds pallor as well as redness a common accompaniment of anger. Rapidity of limb-movement results in most cases, and the innervation of the voluntary muscles is increased, but in a form incoördinate and spasmodic. The effect of anger on the voice is constant; it becomes more guttural or more shrill and the throat contracts. Acts of violence are common, most often directed against other persons, but often directed against lifeless objects. Self-control is usually lost. Premeditated anger is extremely rare. Anger very frequently ends in tears and is often followed by slight prostration or minor derangements but seldom has grave or lasting physical effects. The child usually returns quickly to his normal condition but frequently manifests remorse. A majority of the subjects are described as healthy, yet a considerable number of the children so designated are very nervous or suffer from specific ailments. In a significant number of cases, nervous instability or alcoholism is indicated in the child's heredity. In the vast majority of cases, anger decreases with age either in frequency or in violence or in both.

In the second part of the article, the writer attempts to differentiate the typical forms of anger and to determine the conditions of abnormal irascibility. He distinguishes two fundamental forms of anger, the offensive and the defensive; movements of attack are the index of the first; movements of flight or withdrawal of the second. The writer differs from Lange in his explanation of the aimless movements and



self-inflicted injuries of rage. M. Malapert maintains that in motor activity and in painful impressions the subject is instinctively seeking distraction from the cause of irritation rather than the reestablishment in a state of lowered sensibility of the normal flow of sensations.

The writer believes that nervous instability is the primary factor in producing passionate children. This state is often hereditary, but may be induced by bad management. Since every abnormally violent discharge decreases the stability of the nerve-centers, a child may be rendered more passionate either by an exasperating severity or by finding that he gains his point when he flies into a rage. The example of an irascible parent is rather the pattern of the child's behavior when angry than the initial cause of his irritability.

In his third and last section, M. Malapert presents his pedagogical conclusions. Parents and teachers should study the temperament and state of health of each individual. Hygienic measures should precede moral measures, but in both the educator should beware of exacting the same things from all children, or from any one child the same things at all times and in all circumstances. When a fit of anger has actually set in, the emotion can be checked only by some inhibitive experience vivid enough to counteract it. Although M. Malapert admits that corporal punishment is sometimes effective, yet he ranges himself decidedly with the advocates of the 'appeal to reason.' He strikes, moreover, the keynote of modern pedagogical thought in maintaining that the child is to be taught self-control rather than submission to another. To this end, perfect regularity of life is necessary, and most important of all is quiet firmness on the part of parent and teacher.

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*Les jeux des enfants.* FR. QUEYRAT. Paris, Félix Alcan, 1905. Pp. 158.

This little volume opens with a brief but interesting discussion of the character of imagination in children. The author then takes up the well-known theories of play and concludes with Gross that play is essentially based upon instinct. The psychology of play is then discussed. Pleasure and illusion are said to be its psychic accompaniments. Plays are then classified as to origin and end. With reference to origin, plays are due either to heredity, imitation, or imagination. As to ends served, plays may have educative value for movement, sense, intellect, emotions, will and artistic sense. The book closes with a discussion of the psychology of play with dolls, and some practical suggestions as to toys.

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## VOLITION AND ETHICS.

*The Definition of Will.* F. H. BRADLEY. *Mind*, N. S., Vol. XIII., 1-37.

This is a vigorous defense of the author's definition of will as 'the self-realization of an idea with which the self is identified'—a definition advanced and expounded in an article with the same title in *Mind*, XI., pp. 437-469 and noticed in the *PSYCHOLOGICAL REVIEW*, X., p. 448 ff. The incompatible position that there is a variety of unique types of volition (upheld by Mr. Shand in *Mind*, N. S., No. 23) is first considered—the imperative, hypothetical, disjunctive, negative and averse—and the conclusion reached that 'so far as they are volitions, they consist in the self-realization of an idea, the main question' being as to the exact nature of the idea in each case. The types of will differ, in short, because in each type I will to do something different. The discussion of aversion is here very suggestive and timely. "Aversion is the desire for the negation of something painful. . . Aversion is positive, but its true object is the negation of that which is commonly called its object." The object of aversion does not exist; aversion and desire are alike in this respect. Aversion and desire are not coördinate opposites, as pleasure and pain are. Aversion and desire tend to transform themselves and pass into each other. I cannot will that to which, while willing it, I have an actual aversion. As to the 'ultimate nature of a permanent disposition to act' (averseness), the author writes, 'I should myself decline in psychology even to entertain such a problem.' But the transition from a 'standing will' to an actual volition is produced by Redintegration.

The paper next considers the relation of desire to conation, and finds that 'if conation is understood as the experienced striving of myself' (as distinct from a striving which is not experienced and from a striving only of some psychical element, such as a fixed idea), 'I cannot perceive that everywhere conation is involved in desire.' The paper admits that 'the desired object must contain always to some extent the idea of my actively getting it, and every desire therefore will essentially involve a conation'; but this is true only of the origin of desire and it does not follow that conation belongs to its essential nature. He denies 'that in all desire without exception a conation is implied.'

As to 'the distinctive character of wish,' it is not a striving or conation, is not 'the general head under which desire falls,' is 'not distinguished from desire by its weakness,' and is not distinct from desire in that in desire it is my action to which the real world is op-

posed, while in wish it is something else. "Wish is a desire which in a certain way has been specialized and limited." "Wish is a desire for an imaginary end which, because it is imaginary, can be regarded as attained." The imaginary object and its fruition are, in wish, recognized as out of our reach, the idea being separated from our world by the perceived failure of means to its realization. "Being in a sense satisfied beyond the reality, it is so far removed from collision with fact." "In so far as it is not actually satisfied, a wish tends to collide with the world and to become a desire."

The discussion proceeds to the question in what way the idea in volition realizes itself. First of all, desire and conation are not essential to will. Acts done at once from imitation or in obedience to an order, or in general from the suggestion of an idea, do not involve either; and such acts fall within our definition of volition. Pleasure and pain do not produce my volition. Even if pleasure and pain were always present in volition (which the author does not admit), still the essence of the volitional passage would remain unexplained. As to the 'machinery' of this volitional passage, "we have in the first place a variety of 'special disposition,' and we have in the second place the presence of some ideal suggestion which is at the same time the presence of the starting-point of some one disposition. The consequent passage of this special disposition into act is, we may say, the bridge which carries our idea over into reality." Dispositions may be wholly or partly physical but must in every case possess a psychical aspect. The ideal suggestion is more or less identical in character with the first element of some psychical disposition, and the process described 'is of course so far what is called Redintegration.' If a disposition is originally physical and without a psychical aspect, there must be an experience of the disposition and its resulting action before there can be will: the idea of the end must coincide with the beginning of the disposition.

The paper considers certain objections to this conception and comes to the conclusion "that will is a psychical process certainly not original or ultimate or self-explanatory. It is everywhere a result from that which by itself is not volition. The passage of an idea into existence, we found, is the essence of will; and that passage, we have now seen, depends on machinery. Thus in psychology the conditions of will come before will itself, and, at least in psychology, these conditions are in every sense more ultimate than their consequence." The author does not regard the original tendency of ideas to realize themselves as the essence of volition, because this tendency does not explain how and

why one idea realizes itself in fact while another idea fails. As to pleasure and pain, the paper agrees that without them the will does not in fact originate or exist, but he cannot admit pain and pleasure into the essence of will, because they cannot possibly serve as a bridge for the passage of an idea to reality.

The discussion next considers the objection that, while will is made to rest upon dispositions, dispositions in turn are made to rest upon will; and replies that, in the first place, questions of origin must not be confused with questions of essence, and, in the second place, even if we could prove (what we cannot) that dispositions are the result of pleasure and pain, it does not follow that pleasure and pain are volitional or that dispositions result from will. Consequently we are not warranted in holding that the will is in any sense self-developed or autogenous. There is, for psychology, no will which comes before dispositions.

Every reader of this article has doubtless been led 'once more to examine doctrines too lightly maintained' and has felt grateful to this most keen and subtle thinker for this work. The article is more independent than either of the three articles on kindred subjects in *Mind*, XI., but can best be read in connection with them. The author insists upon the psychological point of view throughout, and one finds himself asking at the close of this discussion, as before at the close of the other three;<sup>1</sup> what then from a psychological point of view is an idea? One wonders whether a similar method applied to idea (as used by the author) might not lead to the conclusion that it also is a psychical process certainly not original or ultimate or self-explanatory, that it is everywhere a result from that which by itself is not an idea, and that in psychology the conditions of an idea come before the idea itself and, at least in psychology, these conditions are in every sense more ultimate than their consequence. As there is for psychology no will which comes before dispositions, may it not also be true that there is for psychology no idea which comes before dispositions? And dispositions? What are they and whence are they? If it is not the business of psychology to entertain these questions, as the author holds, then it surely is the business of psychology to accept some answer from whatever discipline does entertain them.

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<sup>1</sup> Cf. PSYCH. REV., X., p. 442, 7.

*The Relations of Ethics to Metaphysics.* W. H. FAIRBROTHER.  
Mind, N. S., Vol. XIII., No. 49.

Mr. Fairbrother introduces his subject by reference to the Platonic assurance — and the generally accepted Greek faith — that a man can by introspective analysis discover 'the manner in which he ought to live' and can, further, instruct others in the results of his investigation. Moreover, our ethics must be deduced from the truth of things; what ought to be has no effective validity until it is made manifest that it has coherence with what is. The Platonic doctrine may be summed up in two propositions: (1) Ethical doctrine must be deduced or derived directly from the results of metaphysical investigation; (2) This deduction is possible. Both these propositions are strongly affirmed, and, with equal emphasis, denied to-day, such writers as Graham Watson and T. H. Green asserting that 'to act morally is to determine oneself in accordance with the true nature of existence,' while, on the other hand, Leslie Stephen maintains that ethics in common with the other sciences gives us 'knowledge which within its own sphere is entirely independent of the metaphysician's theories.' The point at issue may be put in two ways: "(1) Are the ethical doctrines taught by the more important writers in this subject derived from, or traceable to, their respective metaphysical beliefs? or (2) *in abstracto*, is the subject matter of moral science of such a kind that it is necessarily affected by our belief as to the ultimate nature of man and the universe?"

Mr. Fairbrother, though acknowledging the greater finality of the solution of the latter question, determines, because of its more hopeful possibilities, to attack the problem in the more assured region of philosophical history.

He proceeds, then, to review the ethical teachings of well known and representative writers. Many thinkers (Plato among the ancients, Green and Prof. Watson to-day), explicitly and as far as possible, deductively, base their moral teachings on the results of their metaphysical investigations, not only in matters of abstract principles, but, to a certain extent at least, in affairs of concrete practical detail. On the other hand, many writers, it is popularly supposed, maintain their metaphysics and their ethics as closed domains — notably Kant, Spencer, Mill, and the English moralists of the eighteenth century. The latter, it is true, make no appeal to the truth of things but concentrate their attention on the bare fact of moral approval and disapproval, with much futile concern for 'moral faculty' theories. Mr. Fairbrother then considers individually the ethical systems of Kant,



Spencer and Mill, and makes clearly manifest the interdependence of their ethics and their metaphysics. He is inclined to conclude that 'ethics is independent of metaphysics only in so far as it is valueless even as ethics'; since it is concerned with the conduct of life it necessitates some theory of life which must needs in turn be based on some conclusion as to the nature of reality. What then is the significance of the contention of the school represented by Professor Sidgwick and Mr. Leslie Stephen? In the words of our author it means that 'in this year of our Lord, 1903, our knowledge of reality is not complete enough to enable us to deductively demonstrate the multifarious detail to which answers must be given, and practically acted upon, in daily life.' But the impossibility of such ideal detailed deduction is not peculiar to the science of ethics and must not here any more than in any other field lead us to elevate a temporary difficulty into a general and absolute principle.

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#### APPARATUS.

*Class Experiments and Demonstration Apparatus.* E. B. TITCHENER. *American Journal of Psychology*, XIV., 175-191.

The writer offers a large number of systematic and explicit suggestions in regard to topics and materials of lecture demonstration. He draws a preliminary distinction between 'experiments that are performed psychologically, by the student, and demonstrations that are made to the class by the lecturer' (such as the taking of the instructor's reaction-time). The demonstration-apparatus here discussed is designed for experiments of the first class; it is apparatus which standardizes the conditions for such introspections of the quality of sensations as time and place allow. "The instruments fall roughly into two groups according as the sense appealed to is capable or incapable of 'action at a distance.'" The details presented for vision, hearing, and the skin-senses may be summarized as follows:

I. Visual sensations: (1) Demonstration of the two great visual series, grays and colors. For grays, the best single means of demonstration is Marbe's album of photographic grays. For colors, a true 'psychological spectrum' is needed. This should consist of four bands of color so hinged that the color scale may either be presented in one dimension or made to return on itself, the one band shading off from red to yellow, the second from yellow to green, the third from green to blue and the fourth from blue through purple back to red. No such device, however, is as yet on the market. (2) Demonstra-

tion of the three moments in a color-sensation by (*a*) variation of color-tone and saturation while brightness remains constant; (*b*) variation of brightness and saturation while color-tone remains constant; (*c*) variation of color-tone and brightness while saturation remains constant; and (*d*) variation of saturation while both color-tone and brightness remain constant. The writer has under construction a demonstration color-mixer, consisting essentially of a horizontal shaft running parallel with the front edge of the lecture-table and driven by a motor underneath, which, by means of a set of friction-plates, may be made to turn at any required speed one or more of six large-size discs placed at 30 cm. intervals. (3) Demonstration of the laws of color-mixture. (4) Demonstration of local adaptation and after-images; (5) of contrast; (6) of indirect vision. For color after-images, the Wundt demonstration apparatus is recommended, and for contrast, the Hering window if the dark room is so near that the students may conveniently pass through it in groups. The writer describes simply constructed devices of his own by which one may furnish simultaneously to a large number of students the conditions for the familiar after-image experiment with the abutting black and white fields and central fixation-points, for Meyer's experiment, and for observing the alteration of colors in indirect vision. (7) Demonstration of the effects of color-blindness. The writer exhibits to his classes two sets of Holmgren worsteds as they were actually sorted by two partially color-blind observers. (8) Demonstration of Purkinje's phenomenon. This purpose is sufficiently answered by Professor Sanford's suggestion of requiring the class to observe a selected red and blue through partially closed eyes.

II. Auditory sensations: (1) Demonstrations of the two sound-modalities, noise and tone, by showing (*a*) the distinction between a single noise and a single tone; (*b*) the tonal character of many apparently simple noises (such as the strokes of a hammer upon the blocks of a xylophone); (*c*) the distinction between complex and simple noises and (*d*) between simple tones and clangs; and (*e*) the generation of clangs from noises and of noises from clangs. (2) Demonstration of the range of tonal hearing. The lower limit can scarcely be demonstrated, as the tones are too weak, but the larger Appunn wire forks may be clearly seen to vibrate. (3) Demonstration of pitch-discrimination; (4) of clang-tint; (5) of clang-analysis; (6) of clang-relationship; (7) of the continuity of the tonal series; (8) of beats; (9) of difference-tones; (10) of fusion. Among the devices suggested for these purposes, are the Appunn *c*-box and over-tone appa-

ratus, as an alternative to the Ellis harmonical, for clang-analysis, and a large Mach model of the piano key-board for the explanation of clang-relationship. The new pattern Stern variator, actuated by the Whipple double gasometer, is recommended as the best 'universal' apparatus for demonstrations in tonal psychology.

III. Cutaneous sensations: (1) Demonstration of pressure-spots. A simple instrument devised by von Frey may easily be furnished to every member of a large class. This device consists of a stout horse-hair waxed into a short bit of narrow-bore glass-tubing. (2) Demonstration of warmth and cold spots. Carpenter's 'spikes' rubbed to a rounded point will answer for temperature-cylinders.

Taste, smell, and organic sensations are difficult material for class-demonstrations. The writer gives, however, interesting indications of his own illustrative procedure. He closes his suggestions with remarks upon models, mentioning the Auzoux eye-model, the Steger models of the internal ear, and Helmholtz's mechanical model of ear-drum and ossicles, and giving directions for a home-made model of the cochlea. His article is a contribution to the practical pedagogy of psychology for which every teacher of beginners must be grateful.

E. A. McC. GAMBLE.

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### BOOKS RECEIVED FROM NOVEMBER 7 TO DECEMBER 5.

*Bericht über den I. Kongress für experimentelle Psychologie.* (Giessen, April, 1904.) Edited by F. SCHUMANN. Leipzig, Barth, 1904. Pp. xv + 127.

*Some Aspects of Social Sensitiveness.* W. A. McKEEVER. Master's Diss. University of Chicago, 1904. Pp. 22.

*Psychologische Studien.* I. Abt. *Beiträge zur Analyse der Gesichtswahrnehmung.* 1 Heft; pp. 160. II. Abt. *Beiträge zur Psychologie der Zeitwahrnehmung.* 1 Heft; pp. 166. Leipzig, Barth, 1904. Mk. 5. [These Studien are devoted to the work of the Psychological Institute of the University of Berlin. Both of the issues before us contain collected papers of Professor Schumann.]

*Willensfreiheit, Zurechnung und Verantwortung.* M. OFFNER. Leipzig, Barth, 1904. Pp. ix + 103.

- Interrogative Thought and the Means of its Expression.* EDWARD T. OWEN. Repr. fr. Trans. of the Wisconsin Acad. of Sci., etc., Vol. XIV. Pp. 255-470.
- Education in Religion and Morals.* GEORGE A. COE. Chicago, F. H. Revell Co., 1904. Pp. 434.
- A System of Metaphysics.* GEORGE STUART FULLERTON. New York, Macmillan Co., 1904. Pp. x + 627. \$4 net.
- Adam Smith.* T. W. HIRST. English Men of Letters Series. New York and London, Macmillans, 1904. Pp. viii + 236.
- Mass and Class.* W. J. GHENT. New York and London, Macmillans, 1904. Pp. vii + 256.

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### NOTES AND NEWS.

THE third International Congress of Philosophy will be held at Heidelberg in 1908. The invitation from the German delegates, it is stated, was authorized by the Imperial Government; Prof. Strong of Columbia University has been added to the English-speaking members of the International Commission of the Congress.

WE are in receipt of a *Numéro exceptionnel* (No. 6, 12<sup>e</sup> Ann., November, 1904) of the *Revue de Métaph. et de Morale* devoted to the proceedings of the second International Congress at Geneva. Apart from the five leading papers, given in full, its reports are full and accurate résumés. The proceedings are to be published officially later on — *Actes du Congrès, &c.*, Kündig, Geneva — by a committee. Two topics which were especially reported upon at the Geneva Congress were the project for a *Vocabulaire*, now being realized under the direction of M. Lelande, as is noted below, and the matter of an international language. As to this latter the remarkable progress of Esperanto may be seen by those who care to refer to the report contained in this number of the *Revue* (pp. 1037 ff.) An interesting item is that M. Boviach has done Leibnitz' *Monadology* into Esperanto.

THE two fascicles which have just appeared (7 and 8 of Vol. IV.) of the *Bulletin de la Société française de Philosophie* contain sections of the new *Vocabulaire philosophique* noted in an earlier issue of the *Bulletin*. These two sections cover titles from Dabit to Dys — concluding the letter D. It is interesting to note that the 'international roots' given in the *Vocabulaire* for the principal terms employ affixes and suffixes drawn from the language Esperanto (see a table of meanings on p. 221 of No. 8 of the *Bulletin*).

THE following items are gathered from the press:

FOSTER P. BOSWELL, Ph.D. (Harvard), has been appointed assistant in psychology, and Edwin Lee Norton instructor in philosophy, in the University of Wisconsin. Miss Florence Fitch, Ph.D. (Berlin), has been appointed associate professor of philosophy in Oberlin College.

AT King's College, London, Professor Caldecott will lecture on general psychology during the first and second terms of coming session; Professor Halliburton on histological psychology during first term; and Dr. C. S. Myers on experimental psychology (with demonstrations and laboratory work) during the second and third terms.

MR. FRANCIS GALTON, F. R. S., has founded in London University a fellowship for the promotion of the study of 'National Eugenics' 'the study of the agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally.'

## CONTENTS OF THE MAGAZINES.

AMERICAN JOURNAL OF RELIGIOUS PSYCHOLOGY AND EDUCATION, I., 1. Editorial. Stages of Religious Development: *Jean Du Buy*. The Jesus of History and of the Passion *versus* the Jesus of the Resurrection: *G. Stanley Hall*. Faith: *James H. Leuba*. Miscellany.

MIND, NEW SERIES, 51. On Truth and Practice: *F. H. Bradley*. Meinong's Theory of Complexes and Assumptions (II.): *B. Russell*. The Infinite and the Perfect: *J. S. McKenzie*. Scepticism of the Instrument: *H. G. Wells*. The Conception of Experience in its Relation to the Development of English Philosophy: *T. M. Forsyth*. Miscellany.

AMERICAN JOURNAL OF SOCIOLOGY, X., 2. The Development of Sociology: *Geo. E. Vincent*. The Concepts and Methods of Sociology: *Franklin H. Giddings*. The Problems of Sociology: *Gustav Ratzenhofer*. Moot Points in Sociology (VIII.): *Edward Alsworth Ross*. The Nature of Social Unity: *Romanzo Adams*. Introduction to Sociology (XI.): *G. De Greef*. Miscellany.

JOURNAL OF COMPARATIVE NEUROLOGY AND PSYCHOLOGY, XIV., 5. Retrograde Degeneration in the Corpus Callosum of the White Rat: *S. Walter Ranson*. The Early History of the Olfactory Nerve in Swine: *Edward A. Bedford*. The Relation of the Chorda Tympani to the Visceral Arches in *Microtus*: *Victor E. Emme*. Edi-



torial: Recent Contributions to the Body-Mind Controversy. *C. L. Herrick*. Literary Notices.

INTERNATIONAL JOURNAL OF ETHICS, XV., 1. The Bias of Patriotism; *Alfred Jordan*. Moral Instruction in Schools (concluded): *Herbert M. Thompson*. Music and Morality; *Halbert H. Britan*. Truth and Imagination in Religion: *Ralph Barton Perry*. Human Pre-Existence: *J. Ellis McTaggart*. A Japanese View of American Trade Unionism: *Hoito Ito*. English Prisons and Their Methods: *H. J. B. Montgomery*. Book Reviews.

BULLETIN DE LA SOCIÉTÉ FRANÇAISE DE PHILOSOPHIE, IV., 4. Sur les Origines de la Philosophie de Spencer (Thèse): *M. R. Bertelot*. Discussion.

JOURNAL DE PSYCHOLOGIE NORMALE ET PATHOLOGIQUE, I., 3. La Mesure de l'Intelligence: *J.-J. Van Biersvliet*. Considérations Générales sur la Structure et le Fonctionnement du Système Nerveux (fin): *G. Durante*. Influence des Images sur les Sécrétions: *A. Mayer*. Notes et Discussions. Bibliography: I. Psychologie Normale. II. Psychologie Pathologique. I., 5. L'Amnésie et la Dissociation des Souvenirs par l'Émotion: *Pierre Janet*. Le Langage Psychologique: *P. Sollier*. Notes et Discussions. Bibliographie: I. Psychologie Normale. II. Psychologie Pathologique.

REVUE DE PHILOSOPHIE, IV., 8. La Théorie Physique, son Objet, sa Structure (4<sup>e</sup> article): *P. Duhem*. Du Phénomène Psychologique des Affinités: *Raoul de la Grasserie*. Aristote et Platon suivant Zeller: *Bulliot*. Aristote a-t-il Connu le *Sophiste*? *C. Huit*. Miscellany.

REVUE DE L'ÉCOLE D'ANTHROPOLOGIE, XIV., 8-9. Les Tumulus (Cours de Technologie ethnographique): *A. D. Mortillet*. La Valeur Physique Générale des Indigènes Sahariens: *J. Huguet*. Monographie de la Grotte de Noailles (Corrèze): *L. Bardon* et *J. A. Bouyssonie*.

L'ANNÉE PHILOSOPHIQUE, XIV. La Morale d'Épicure: *V. Brochard*. La Critique de Bayle. Critique des Attributs de Dieu: Simplicité: *F. Pillon*. Essai sur l'Instinct réaliste. Descartes et Thomas Reid: *L. Dauriac*. Corrections à la Traduction Française des Prolégomènes de Kant: *O. Hamelin*. Bibliographie Philosophique Française de l'Année 1903: *F. Pillon*. Nécrologie: Charles Renouvier: *F. Pillon*.

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AGENT: G. E. STECHERT, LONDON (2 Star Yard, Carey St., W. C.);  
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Entered as second-class matter January 27, 1904, at the post-office at Lancaster, Pa., under  
Act of Congress of March 3, 1879.

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